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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/593,630	09/21/2006	Nobuhiro Ide	80083(302721)	2578

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EXAMINER
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DIAZ, JOSE

ART UNIT	PAPER NUMBER
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2879

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01/18/2012

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

Application No.

10/593,630

Applicant(s)

IDE ET AL.

Examiner

JOSE M. DIAZ

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 04 January 2012.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on \_\_\_\_; the restriction requirement and election have been incorporated into this action.
- 4) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 5) ☒ Claim(s) 2,6-11,13,18 and 19 is/are pending in the application.
- 5a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 6) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 7) ☒ Claim(s) 2,7, 10-11,13,18 and 19 is/are rejected.
- 8) ☒ Claim(s) 6,8 and 9 is/are objected to.
- 9) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 10) ☐ The specification is objected to by the Examiner.
- 11) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 12) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948)                        | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____.  |

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on January 4, 2012 has been entered.

Cancellation of claims 3-5 has been entered.

Claims 2, 6-11, 13, and 18-19 are pending in the instant application.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claim 19 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. On line 19, the claim recites the limitation "wherein the optical spacer is a single layer". Paragraph [75] of the instant application as

published does not state that the optical spacer is a single layer. Therefore, this constitutes new matter.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

a. A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Kato et al (20040004682)**, **Kato hereinafter**, in view of **Kido et al (20030189401)**, **Kido hereinafter**.

Regarding **claim 2**, Kato discloses an organic light emitting device (35, ¶ [53]) having an emission layer (14) between an anode and a cathode, wherein the organic light emitting device further comprises: an optically-transparent substrate (11) having a first surface and a second surface; and a light scattering means (¶ [56]), at least either inside or outside the device, for scattering light emitted from the emission layer (14), wherein a first electrode (15) of the anode or the cathode is an optically-transparent electrode having a first surface and a second surface and the second surface of the first electrode (15) is mounted on the first surface of the optically-transparent substrate (11); wherein a second electrode (13) of the anode or the cathode has a first surface and a second surface, and the second surface of the second electrode (13) is mounted

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on the first surface side of the first electrode (15) so that the emission layers (14) intervene between the first surface of the first electrode (15) and the second surface of the second electrode (13), and wherein the second electrode (13) is a light-reflective electrode wherein the organic light emitting device (35) further comprises a layer (electron transport layer ¶ [28], ET hereinafter) having a first surface, and a second surface provided on the emission layers (14) so that the layer intervene between the emission layers (14) and the second surface of the second electrode (13), the layer having variations of a film thickness of the layer, the layer and the second surface side of the second electrode (13) forming the light scattering means (¶ [56], the ET layer follows the contour of the second electrode at the interface, therefore it has variations of a film thickness of the layer) (fig. 5).

However, Kato fails to exemplify a plurality of emission layers being separated from each other by an equipotential surface forming layer or a charge generating layer.

In the same field of endeavor, Kido discloses a plurality of emission layers (3-1, 3-2, 3-3) being separated from each other by an equipotential surface forming layer or a charge generating layer (4-1, 4-2) (fig. 8, ¶ [0175]), in order to effectively and stably provide a device structure capable of achieving a long operational life time with a light-emission at a higher luminance.

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to provide a plurality of emission layers being separated from each other by an equipotential surface forming layer or a charge generating layer as taught by Kido in the device of Kato, in order to effectively and

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stably provide a device structure capable of achieving a long operational life time with a light-emission at a higher luminance.

Regarding **claim 4**, Kato discloses an organic light emitting device (10, ¶ [42]) having an emission layer (14, ¶ [45]) between an anode and a cathode, wherein the organic light emitting device (10) further comprises: an optically-transparent substrate (16) having a first surface and a second surface; and a light scattering means (¶ [45]), at least either inside or outside the device, for scattering light emitted from the emission layer (14), wherein a first electrode (15) of the anode or the cathode has a first surface and a second surface and the second surface of the first electrode (15) is mounted on the first surface of the optically-transparent substrate (16), wherein a second electrode (13, ¶ [46]) of the anode or the cathode is a light reflective electrode having a first surface and a second surface, and the second surface of the second electrode (13) is mounted on the first surface side of the first electrode (15) so that the emission layer (14) intervene between the first surface of the first electrode (15) and the second surface of the second electrode (13), and wherein the light scattering means comprises the first electrode (15), which is a light scattering and optically-transparent electrode (¶ [46]) (fig. 2).

However, Kato fails to exemplify a plurality of emission layers being separated from each other by an equipotential surface forming layer or a charge generating layer.

In the same field of endeavor, Kido discloses a plurality of emission layers (3-1, 3-2, 3-3) being separated from each other by an equipotential surface forming layer or a charge generating layer (4-1, 4-2) (fig. 8, ¶ [0175]), in order to effectively and stably

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provide a device structure capable of achieving a long operational life time with a light-emission at a higher luminance.

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to provide a plurality of emission layers being separated from each other by an equipotential surface forming layer or a charge generating layer as taught by Kido in the device of Kato, in order to effectively and stably provide a device structure capable of achieving a long operational life time with a light-emission at a higher luminance.

Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Kato et al (20040004682)**, **Kato hereinafter**, in view of **Kido et al (20030189401)**, **Kido hereinafter**, and further in view of **Nii et al (WO 2005029923)**, **Nii hereinafter**.

***Examiner's note***

The following rejection is partially based on an international reference Nii et al (WO 2005029923). For rejection purposes reference is made to the US counterpart (20070099024), due to referencing convenience.

Regarding **claim 18**, the combination of Kato and Kido discloses the claimed invention according to claim 2.

However, the combination of Kato and Kido fails to exemplify that the layer between the emission layers and the second surface of the second electrode is an electron injection layer.

In the same field of endeavor, Nii discloses an electron injection layer between a emission layers and a second surface of a second electrode (§ [57]), in addition to an electron transport layer, in order to improve the charge mobility within the device.

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to provide an electron injection layer between a emission layers and a second surface of a second electrode, in addition to an electron transport layer as taught by Nii in the combination of Kato and Kido, in order to improve the charge mobility within the device.

Claims 7, 10-11 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Tyan et al (20040061136), Tyan hereinafter**, in view of **Kido et al (20030189401), hereinafter Kido**.

Regarding **claim 7**, Tyan discloses an organic light emitting device (109, § [48], fig. 9) having an emission layer (30) between an anode and a cathode, wherein the organic light emitting device (109) further comprises an optically-transparent substrate (10) having a first surface and a second surface, wherein a first electrode (14) of the anode or the cathode is an optically-transparent electrode having a first surface and a second surface and the second surface of the first electrode (14) is mounted on the first surface of the optically-transparent substrate (10), wherein a second electrode (22) of the anode or the cathode is an optically-transparent electrode having a first surface and a second surface, and the second surface of the second electrode (22) is mounted on the first surface side of the first electrode (14) so that the emission layer (30) intervene

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between the first surface of the first electrode (14) and the second surface of the second electrode (22), wherein a light reflective element (26) is provided on the first surface of the second electrode (22), wherein an optical spacer (24) is provided between the first surface of the second electrode (22) and the light reflecting element (26).

However, Tyan is silent about a distance between the light reflective element and the emission layers is in the range of  $1\mu\text{m}$  to  $1\text{mm}$  by means of the optical spacer so as to be set to a distance where an angle dependency of light emission brightness and light emission color can be reduced.

Meanwhile, Tyan discloses on ¶ [132] that various well-known optical effects in order to enhance its properties if desired includes optimizing layer thickness to yield maximum light transmission.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide a distance between the light reflective element and the emission layers by means of the optical spacer to be in the range of  $1\mu\text{m}$  to  $1\text{mm}$ , since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable range involves only routine skill in the art, in order to enhance optical properties of the device.

However, Tyan fails to exemplify a plurality of emission layers being separated from each other by an equipotential surface forming layer or a charge generating layer.

In the same field of endeavor, Kido discloses a plurality of emission layers (3-1, 3-2, 3-3) being separated from each other by an equipotential surface forming layer or a charge generating layer (4-1, 4-2) (fig. 8, ¶ [0175]), in order to effectively and stably

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provide a device structure capable of achieving a long operational life time with a light-emission at a higher luminance.

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to provide a plurality of emission layers being separated from each other by an equipotential surface forming layer or a charge generating layer as taught by Kido in the device of Tyan, in order to effectively and stably provide a device structure capable of achieving a long operational life time with a light-emission at a higher luminance.

It is to be noted that the combination of Tyan and Kido meets all the structure limitations of the organic light emitting device. The limitation "so as to be set to a distance where an angle dependency of light emission brightness and light emission color can be reduced" is a functional statement. Therefore the in the combination of Tyan and Kido distance between the light reflective element and the emission layers can be adapt to perform the claimed function, i.e. to reduce an angle dependency of light emission brightness and light emission color.

The following is a quotation of the MPEP 2114

APPARATUS CLAIMS MUST BE STRUCTURALLY DISTINGUISHABLE FROM THE PRIOR ART

>While features of an apparatus may be recited either structurally or functionally, claims< directed to >an< apparatus must be distinguished from the prior art in terms of structure rather than function. >In re Schreiber, 128 F.3d 1473, 1477-78, 44 USPQ2d 1429,1431-32 (Fed. Cir. 1997) (The absence of a disclosure in a prior art reference

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relating to function did not defeat the Board's finding of anticipation of claimed apparatus because the limitations at issue were found to be inherent in the prior art reference); see also *In re Swinehart*, 439 F.2d 210, 212-13, 169 USPQ 226, 228-29 (CCPA 1971); < *In re Danly*, 263 F.2d 844, 847, 120 USPQ 528, 531 (CCPA 1959). “[A]pparatus claims cover what a device is, not what a device does.” *Hewlett-Packard Co. v. Bausch & Lomb Inc.*, 909 F.2d 1464, 1469, 15 USPQ2d 1525, 1528 (Fed. Cir. 1990) (emphasis in original).

Regarding **claim 10**, in the combination of Tyan and Kido, Kido discloses that the plurality of emission layers comprises emission layers (3-1, 3-2, 3-3) of at least two different emission colors (fig. 8, ¶ [0207]).

Same rationale to combine from the rejection of claim 7 applies.

Regarding **claim 11**, in the combination of Tyan and Kido, Kido discloses that the emission color of the organic light emitting device is white (fig. 8, ¶ [0207], claim 29).

Same rationale to combine from the rejection of claim 7 applies.

Regarding **claim 13**, in the combination of Tyan and Kido discloses the claimed invention according to claim 7.

However, in the combination of Tyan, and Kido, Tyan is silent about the multilayered film been formed of a dielectric material.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to make the light reflecting multilayer film of a dielectric material, since it has been held to be within the general skill of a worker in the art to select a

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known material on the basis of its suitability for the intended use as a matter of obvious design choice.

***Allowable Subject Matter***

Claims 6 and 8-9 are allowed.

The reasons for allowance were previously stated on the Office action mailed on 01/13/2010.

***Response to Arguments***

Applicant's arguments filed January 4, 2012 have been fully considered but they are not persuasive.

With regards to claim 2, Kato discloses an electron transport layer that follows the contour of the second electrode at the interface; therefore it has variations of a film thickness of the layer; as stated on the rejection above.

With regards to claim 7, Applicants argue that Tyan fails to describe or suggest which layers should be optimized to yield maximum light transmission and also fails to describe or suggest optimizing a distance between a light reflective element (8) and the emission layers (3) in the range of 1 $\mu$ m to 1mm. The Examiner most respectfully disagrees.

When Tyan discloses the use various well-known optical effects in order to enhance the device properties if desired one of ordinary skills in the art would not take the mentioned examples as the only possible techniques. For instance, in document US

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20090153030 A1, ¶ [310] a similar statement to the one Tyan brings is made and the microcavity technique is mentioned. For the microcavity technique a film thickness is adjusted to achieve the desired optical effect and the thickness can be optimized so as to fall in the claimed range.

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

US 20090153030 A1

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JOSE M. DIAZ whose telephone number is (571)272-9822. The examiner can normally be reached on 7:00 - 5:00 EST Monday-Thursday; Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimesh Patel can be reached on 571-272-2457. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/José M. Díaz/  
Examiner, Art Unit 2879

/NIMESHKUMAR D. PATEL/  
Supervisory Patent Examiner, Art Unit 2879